Appln. No. 09/823,363
Amdt. dated October 5, 2005
Reply to Office Action dated July 5, 2005

R E M A R K S/ A R G U M E N T S

Reconsideration of the present application, as amended, is respectfully requested.

The July 5, 2005 Office Action and the Examiner's comments have been carefully considered. In response, the claims are amended, and remarks are set forth below in a sincere effort to place the present application in form for allowance. The amendments are supported by the application as originally filed. Therefore, no new matter is added.

ALLOWABLE SUBJECT MATTER

The Examiner's indication that claims 7 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims, is acknowledged and appreciated. Claims 7 and 14 are not rewritten in independent form at this time in view of the asserted allowability of claims 17 and 18 from which claims 7 and 14 depend. Applicants reserve the right to place claims 7 and 14 in independent form in response to a subsequent Patent Office communication.

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PRIOR ART REJECTIONS

In the Office Action, claims 2-6, 9-13 and 15-19 are rejected under 35 USC 102(a) as being anticipated by USP 6,167,092 (Lengwehasit).

In response, remarks are set forth below to more clearly explain how the present claimed invention is patentable over the cited reference. Claims 17 and 18 recite "determining at least one of the horizontal complexity and the vertical complexity of said MB by determining the value of a predetermined one of the coefficients, wherein said predetermined coefficient represents the highest of at least one of horizontal frequency and vertical frequency."

The present claimed invention as defined by claims 17 and 18 determines the horizontal and/or vertical complexity of the macroblock of pixels corresponding to the received array of DCT coefficients by determining the value of a predetermined coefficient in the received array of DCT coefficients without scanning the entire array. After this, a sub-array within the DCT coefficient array is IDCT coded in order to reconstruct the original macroblock of pixels, where the size and position (within the DCT coefficient array) is selected based on the value of the predetermined coefficient.

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More specifically, referring to Fig. 3 of the present

application, for each MB of each frame, an 8 x 8 array of DCT

coefficients is received (Step 302), typically from a storage

device or transmission device. In Step 304 the value of a

predetermined coefficient (in an embodiment of the present

application coefficient 56; see Fig. 1) is determined. This is a

predefined evaluation of the 8 x 8 array which does not

necessitate scanning the entire array to determine the location

of the last nonzero coefficient as was conducted in the prior

art. Coefficient 56 is associated with the highest frequency of

horizontal motion (see the present application at page 6, line 25.

- page 7, line 1). Coefficient 56 is selected to determine

computational complexity when seeking to minimize horizontal

degradation while permitting vertical degradation (since vertical

degradation occurs much less frequency in typical programs as

explained in the present application at page 8, line 4 - page 9,

line 2).

In Step 306, according to a predetermined association of the

maskings for subsets of DCT coefficients (Figs. 2A-H) with the

value of coefficient 56, a predetermined one of the maskings is

selected. In Step 308 the selected subset of DCT coefficients is

used in an inverse DCT operation to recover an approximation of

the original macroblock. With the dynamic selection of

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coefficient subsets according to the value of coefficient 56,

lower complexity is used when there is not much horizontal

motion, and higher complexity is used to minimize degradation for

various greater amounts of horizontal motion. In one embodiment

of the invention, two subset selections are employed (the 55%

complexity subset of Fig. 2G for values of coefficient 56 below a

predetermined threshold, and the 86% complexity subset of Fig. 2C

for values at or above the predetermined threshold).

Lengwehasit selects from a set of IDCT algorithms ("pruned

IDCT algorithms") to apply to the DCT coefficient array.

Lengwehasit scans the entire PCT coefficient array, finds the

last nonzero coefficient in the DCT coefficient array (or string)

and uses the location (not value) of that last nonzero

coefficient within the array (string) to select the particular

pruned IDCT algorithm to utilize.

Lengwehasit requires that the entire array (string) be

scanned to determine the location of the last non-zero

coefficient. Lengwehasit uses the location (not value) of the

last nonzero coefficient to determine which pruned IDCT algorithm

to use. It is noted that the last nonzero coefficient is not

predetermined, and may change with each array.

In contrast, the present claimed invention as defined by

claims 17 and 18 only determines the value of a predetermined

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coefficient (the location of the coefficient does not change,
i.e., it is predetermined, as opposed to Lengwehasit wherein the
coefficient is not predetermined but changes depending upon the
location of the last nonzero coefficient) to select the size and
position of the sub-array to be IDCT coded. That is, claims 17
and 18 do not require the entire array to be scanned, and the
location of the coefficient whose value will be read is
predetermined, i.e., fixed - for example, in one embodiment where
a 8 x 8 array is employed, it will always be the value of the
coefficient at location 56 that is determined. In contrast, the
method of Lengwehasit must find the location of the last nonzero
coefficient within the array (string), and, once found,
Lengwehasit does not determine the value of that last nonzero
coefficient. Moreover, the location of the coefficient used by
Lengwehasit changes depending upon the location of the last
nonzero coefficient.

Lengwehasit does not disclose, teach or suggest determining
the horizontal and/or vertical complexity of the original
macroblock of pixels by determining the value of a particular
predetermined coefficient. Lengwehasit does not disclose, teach
or suggest having the size and/or single position of a subset (or
sub-array) within the received DCT coefficient array which will
be IDCT coded being selected by determining the value of a

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particular predetermined coefficient. In fact, Lengwehasit does

not disclose, teach or suggest determining the individual value

of any particular DCT coefficient as part of the decoding system

or method.

That is, Lengwehasit does not disclose, teach or suggest a

method of decoding a video signal or a system for decoding a

video signal including, _inter alia_:

determining at least one of the horizontal complexity and

the vertical complexity of said MB by determining the value of a

predetermined one of the coefficients, wherein said predetermined

coefficient represents the highest of at least one of horizontal

frequency and vertical frequency; and/or

performing inverse DCT (IDCT) coding on a sub-array of

coefficients within the DCT coefficient array in order to

reconstruct said macroblock, wherein the size and position of

said sub-array depends on the determined value of the

predetermined one of the coefficients having the highest of at

least one of horizontal frequency and vertical frequency. (See

claim 17, lines 8-18; and claim 18, lines 9-19).

None of the other references of record close the gap between

the present claimed invention as defined by claims 17 and 18 and

Lengwehasit. Therefore, claims 17 and 18 are patentable over all

of the references of record when taken either alone under 35 USC

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102 or in combination under 35 USC 103.

Claims 2-7 and 9-16 are either directly or indirectly dependent on claims 17 and 18 and are patentable over the cited references in view of their dependence on claims 17 or 18, and because the references do not disclose, teach or suggest each of the limitations set forth in the dependent claims.

Based at least on the foregoing, claims 2-7 and 9-19 are in form for immediate allowance, which action is earnestly solicited.

NEW CLAIMS

New claims 20 and 21 are added to the present application. Claims 20 and 21 further define and limit the invention defined by claims 17 and 18 wherein the entire array of DCT coefficients is not scanned prior to determining the value of the predetermined one of the coefficients. Support for claims 20 and 21 can be found throughout the present application, for example in the description of an embodiment of the invention with reference to Fig. 3 at page 10, line 7 - page 11, line 9.

New claims 22-23 are added to the present application. Claims 22 and 23 further define and limit the invention defined by claims 17 and 18 wherein the location of the predetermined one of the coefficients is predetermined. Support for claims 22 and

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23 can be found throughout the present application, for example in the description of an embodiment of the invention with reference to Fig. 3 at page 10, line 7 - page 11, line 9.

Submitted herewith is a Credit Card Authorization Form in the amount of $100.00 for the addition of two (2) dependent claims above the highest number of dependent claims for which payment was previously made. If any additional fees are due, or if any overpayment has been made, please charge or credit Deposit Account No. 14-1270 for such sum.

Claims 20-23 are patentable over the reference of record in view of their dependence on claim 17 or 18, for the reasons, *inter alia*, set forth above, and because the cited reference does not disclose, teach or suggest each of the limitations set forth in claims 20-23.

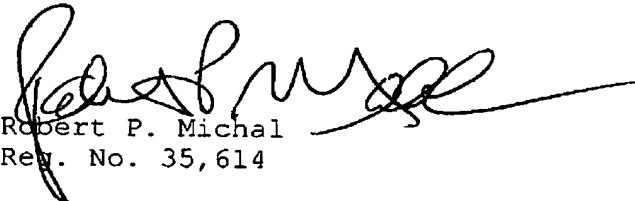* *

If the Examiner disagrees with any of the foregoing, the Examiner is respectfully requested to point out where there is support for a contrary view.

Entry of the amendment, allowance of the claims, and the passing of the application to issue are respectfully solicited.

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If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,

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October 5, 2005

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